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Job satisfaction of people with intellectual disabilities

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2016

document version

Publisher's PDF, also known as Version of record

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citation for published version (APA)

Akkerman, A. (2016). *Job satisfaction of people with intellectual disabilities: Associations with job characteristics, fulfilment of basic psychological needs and autonomous motivation*. Drukkerij Van Dijk.

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CHAPTER 5

THE RELATIONSHIP BETWEEN JOB CHARACTERISTICS AND JOB SATISFACTION OF PEOPLE WITH INTELLECTUAL DISABILITIES: THE MEDIATING ROLE OF BASIC PSYCHOLOGICAL NEEDS

This chapter is based on:

Akkerman, A., Kef, S., & Meininger, H.P.

The relationship between job characteristics and job satisfaction of people with intellectual disabilities: the mediating role of basic psychological needs.

Manuscript under review.

ABSTRACT

Background Many people with intellectual disabilities are involved in work. It is desirable that their work enables them to flourish and achieve satisfaction, and hence that their needs are fulfilled. Knowledge of the associations between job characteristics, need fulfilment and job satisfaction of people with intellectual disabilities is limited. Using the job demands-resources model and self-determination theory, this study investigated whether basic psychological needs (autonomy, relatedness, competence) explain the relationship between job characteristics (job demands, job resources) and job satisfaction of people with intellectual disabilities.

Method 117 persons with intellectual disabilities, recruited from a Dutch care organization, were interviewed using questionnaires adapted from well-established instruments measuring job characteristics, needs and job satisfaction.

Results Job resources were positively and job demands negatively associated with fulfilment of basic psychological needs. Both job resources and basic psychological needs were associated with enhanced job satisfaction. Basic psychological needs partially mediated the relationship between job resources and job satisfaction.

Conclusions In order to provide people with intellectual disabilities with a good workplace that contributes to job satisfaction, it would seem useful to focus on the fulfilment of their needs for autonomy, relatedness and competence. Therefore, in line with current practices, diminishing negative, demanding job characteristics can be advised, and, more importantly, a focus on enhancing positive, resourceful job characteristics in selecting and designing workplaces.

INTRODUCTION

These days many people with intellectual disabilities are involved in work, in either integrated or sheltered employment settings, and it is often an important part of their life (Verdonschot, De Witte, Reichrath, Buntinx, & Curfs, 2009). Work provides social relations, structures time, contributes to identity, allows one to develop skills and contribute to society, and may provide an opportunity for financial independence (Cramm, Finkelflügel, Kuijsten, & van Exel, 2009; Eggleton, Robertson, Ryan & Kober, 1999; Jahoda, 1982; Judge & Klinger, 1998; Lysaght, Cobigo, & Hamilton, 2012). The Universal Declaration of Human Rights of the United Nations (UN General Assembly, 1948) stresses the human right on employment, and just and favourable conditions of work for all humans.

Given the importance of work in the lives of people with intellectual disabilities, it is desirable that it enables them to flourish and achieve satisfaction. To enhance our understanding on how this might be achieved this study will focus on the associations between job characteristics, need fulfilment and job satisfaction of people with intellectual disabilities. Job satisfaction is an indicator for work related well-being, that has been associated with overall well-being and life satisfaction (Cummins, 2005; Judge & Klinger, 2008; Schalock, Bonham, & Marchant, 2000), as well as behaviours that may affect organizational functioning, such as absenteeism, voluntary turnover, counterproductive behaviour and job performance (Fritzsche & Parrish, 2005; Judge & Klinger, 2008; Spector, 1997). Research among employees without intellectual disabilities points to associations between fulfilment of needs and job satisfaction (e.g.; Ilardi, Leone, Kasser, & Ryan, 1993; Lynch, Plant, & Ryan, 2005; Vansteenkiste et al., 2007), and suggests that a work environment that allows for the fulfilment of needs may be needed for employees to develop their full potential (Baard, Deci, & Ryan, 2004; Gagné & Deci, 2005). It is assumed that this also applies to workers with disabilities, as they have the same needs and want similar things in their work as do people without disabilities (Goode, 1989; Melchior & Church, 1997). Meeting a person's needs and enhanced job satisfaction can be thus considered significant work-related goals for people with intellectual disabilities, the importance of which has been emphasized previously (Akkerman, Janssen, Kef & Meininger, 2016; Chiochio & Frigon, 2006; Eggleton, Robertson, Ryan, & Kober, 1999; Lysaght et al., 2012; Melchiori & Church, 1997; Pedlar, Lord, & Van Loon, 1990). Nevertheless, in intellectual disabilities research few studies have actually focused on needs and job satisfaction (Akkerman et al., 2016; Chiochio & Frigon, 2006; Lysaght et al., 2012; Melchiori & Church, 1997), and the main focus in employment support traditionally seems to be on skills and abilities (Melchiori & Church, 1997; Van Hal, Meershoek, De Rijk, & Nijhuis, 2012). Moreover, it remains unclear how characteristics of the work environment are related to need fulfilment and job satisfaction of workers with intellectual disabilities. Enhanced insight into this is necessary, in order to provide effective employment support and select or design suitable work environments.

The current study will contribute to the literature on employment of people with intellectual disabilities by investigating how job characteristics, fulfilment of needs and job satisfaction of people with intellectual disabilities are related. To this end, two distinct, yet complementary perspectives will be used. The first perspective focuses on the relationship between job characteristics (i.e. job demands and job resources) and job satisfaction, using the job demands-resources model (JD-R; Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001) as a theoretical framework. The second perspective focuses on the associations between fulfilment of basic psychological needs and job satisfaction, and uses self-determination theory (SDT; Deci & Ryan, 2000) as a theoretical framework. These two perspectives are complementary to each other, and offer, in conjunction, a more complete view on the factors and processes that are relevant for job satisfaction of people with intellectual disabilities, by suggesting that basic psychological needs may mediate the relationship between job characteristics and job satisfaction (De Cooman, Styne, Van den Broeck, Sels, De Witte, 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). The explanatory role of basic psychological needs in the relationship between job characteristics and job satisfaction of workers with intellectual disabilities has, to our knowledge, not been studied yet. Increased knowledge on these processes may provide employers and employment specialists with the information needed to stimulate optimal functioning and well-being at work, and allow individuals to flourish and have positive experiences. Below, both perspectives will be discussed and the relationship between them will be further clarified.

Job characteristics

Selection or design of a suitable work-environment is crucial for individual functioning and hence a key element of employment support for people with intellectual disabilities (Ellenkamp, Brouwers, Embregts, Joosen, Van Weeghel, 2016; Nietupski & Hamre-Nietupski, 2000). Knowledge of characteristics of the job is needed for providing an adequate match between the individual and the workplace. Moreover, job characteristics have been found to be associated with job satisfaction, in both workers with and without disabilities (Akkerman et al., 2016; Flores, Jenaro, Orgaz, & Martin, 2011; Frye, 1996; Fritzsche & Parrish, 2005; Judge & Klinger, 2008). Work environments consist of several job characteristics. According to the JD-R model (Bakker & Demerouti, 2007; Demerouti, Bakker, Nachreiner, & Schaufeli, 2001), employee health and well-being may result from a balance between negative job characteristics (job demands) and positive job characteristics (job resources). More specifically, job demands refer to "those physical, psychological, social, or organizational aspects of the job that require sustained physical and/or psychological (cognitive and emotional) effort or skills and are therefore associated with certain physiological and/or psychological costs" (Bakker & Demerouti, 2007, p.312). This includes for instance

work overload, heavy lifting or conflicts at work. Job resources refer to "those physical, psychological, social or organizational aspects of the job that are either/or (a) functional in achieving work goals (b) reduce job demands and the associated physical and psychological costs, (c) stimulate personal growth, learning and development." (Bakker & Demerouti, 2007, p.312). This includes for instance social support, career opportunities and participation in decision making. Job demands and job resources are theorized to be associated with job outcomes through two different processes. It is proposed that the presence of job demands and the absence of job resources may lead to negative outcomes as a result of a depletion of energy (health impairment process), whereas job resources may lead to positive outcomes as a result of a motivational process (Bakker & Demerouti, 2007).

The JD-R model constitutes an overarching model, that may be applied to various occupational settings, regardless of the particular demands and resources involved (Bakker & Demerouti, 2007), and there is ample evidence for the credibility of the core assumptions that job demands are the main predictors of negative job outcomes and job resources of positive job outcomes (Demerouti et al., 2001; Bakker & Demerouti, 2007; Schaufeli & Taris, 2014). With respect to job satisfaction findings generally point to a positive association between job resources and job satisfaction, and either a negative association or lack of association between job demands and job satisfaction (e.g. Bos, Donders, Bouwman-Brouwer, & Van der Gulden, 2009; Kinzl et al., 2005; Nielsen, Mearns, Mathiesen, & Eid., 2011; Orgambidez-Ramos, Borrego-Alés, & Mendoza-Sierra, 2014). A study among people with intellectual disabilities (Flores et al., 2011) reflects these findings, reporting a negative impact of job demands, and a positive impact of job resources (social support from co-worker and from supervisor) on quality of working life, a concept closely related to job satisfaction, of people with intellectual disabilities in sheltered workshops and supported employment.

Our understanding of the factors associated with job satisfaction of people with intellectual disabilities can be developed further by gaining insight into the underlying processes that explain the relationship between job characteristics and job satisfaction. Recent studies among nondisabled employees indicate that fulfilment of needs may play an important role in this connection (e.g. De Cooman et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008).

Basic psychological needs

Meeting an individual's needs is an essential element in support for people with intellectual disabilities, and this has also been emphasized for work situations (Chiocchio & Frigon, 2006; Eggleton et al., 1999; Kreuger, Van Exel, & Nieboer, 2008; Melchiori & Church, 1997; Pedlar, Lord, & Van Loon, 1990). Fulfilment of needs enables workers with intellectual disabilities to develop their full potential, and is indicative of their quality of life (Deci, 2004; Eggleton et al., 1999; Kreuger et al., 2008). According to self-determination theory (SDT; Deci & Ryan,

2000; Ryan & Deci, 2000a) needs can be defined as "innate psychological nutrients that are essential for ongoing psychological growth, integrity, and well-being" (Deci & Ryan, 2000, p.229). Three innate basic psychological needs are distinguished: autonomy, relatedness and competence. The need for autonomy refers to the experience of a sense of volition and self-endorsement of behaviour. Autonomy can be realized when a person with intellectual disabilities has the opportunity to make personal choices at work, but also when following others' requests (e.g. supervisor, co-worker, mentor), as long as these are fully endorsed. This can be stimulated by providing choice rather than control, a meaningful rationale for executing the request, and acknowledging a persons' perspective and feelings (Deci, 2004; Van den Broeck, Vansteenkiste, & De Witte, 2008). The need for relatedness refers to the desire to feel connected to significant others. This is more likely to be achieved for workers with intellectual disabilities who feel part of a team and who can share their work-related and personal difficulties, than for those who experience loneliness and have no confidants at work (Van den Broeck, Vansteenkiste, & De Witte, 2008). The need for competence refers to the experience of a sense of effectiveness in interacting with one's environment (Deci & Ryan, 2000). This can be achieved when work provides an optimal challenge, and tasks are optimally discrepant from one's skill level, and can be strengthened by providing positive feedback (Deci, 2004).

Fulfilment of basic psychological needs is considered essential for individual growth and wellness, whereas thwarting of the needs is assumed to lead to ill-being and non-optimal functioning (Ryan & Deci, 2000b). Within the work context basic need fulfilment has been found to affect various aspects of employee well-being, and has been associated with enhanced job satisfaction (e.g. Baard, Deci, & Ryan, 2004; Ilardi, Leone, Kasser, & Ryan, 1993; Lynch, Plant, & Ryan, 2005; Vansteenkiste, Neyrinck, Niemic, Soenens, De Witte, & Van den Broeck, 2007). People with intellectual disabilities are assumed to have the same needs and want similar things in their work as do people without disabilities, and the assumptions of SDT are assumed to apply to them as well (Deci, 2004; Goode, 1989; Melchiori & Church, 1997). Few studies have applied SDT within the intellectual disabilities field, confirming the applicability of SDT among people with intellectual disabilities (e.g. Farrell, Crocker, McDonough, Sedgwick, 2004; Frielink, Schuengel, Kroon, & Embregts, 2015). In addition, qualitative results (e.g. Akkerman, Janssen, Kef, & Meininger, 2014) indicate that, when workers with intellectual disabilities were asked for aspects affecting their job satisfaction, the desire to feel a sense of control over their own actions, to feel connected to others, and to function effectively were brought forward.

Workers with intellectual disabilities may require more help in fulfilling their needs than do nondisabled workers. When employers and employment specialists have more insight into the factors that contribute to their needs, it may enable them to provide work situations that better meet their needs and enhance job satisfaction. SDT assumes that the work context plays an important role in this respect (Gagné & Deci, 2005; Van den Broeck, Vansteenkiste, & De Witte, 2008). Work environments can be either supportive of the basic psychological needs for autonomy, relatedness and competence, or be need thwarting. Job characteristics may play an important role in this respect. Knowledge on the job characteristics that are supportive of fulfilment of basic psychological needs of people with intellectual disabilities is lacking thus far.

Association between job characteristics and need fulfilment

Recent research among employees without intellectual disabilities indicates that basic psychological need fulfilment plays an explanatory role in the association between job characteristics (i.e. job resources and job demands) and employee well-being (e.g. Boudrias et al., 2011; De Cooman et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). Based on the assumptions of the JD-R model and SDT it has been suggested that job resources may establish conditions that promote growth, and hence motivate employees by facilitating fulfilment of the basic psychological needs for autonomy, competence and relatedness. Job demands on the other hand are assumed to require energy and be health impairing, deterring the fulfilment of employees' needs. Findings confirmed positive associations between job resources and need fulfilment (e.g. De Cooman et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008), whereas negative associations were found between job demands and need fulfilment in some studies (De Cooman et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008), yet not in others (Boudrias et al., 2011; De Cooman et al., 2013). Moreover, mediating effects were found of needs on the relationship between job characteristics (particularly job resources) and various indicators of employee well-being and ill-being (e.g. vigor, psychological health at work, burnout, exhaustion, autonomous motivation, work effort) (Boudrias et al., 2011; De Cooman et al., 2013; Fernet, Austin, Trépanier, & Dussault, 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). Empirical studies explaining the connection between job characteristics and job satisfaction of people with intellectual disabilities have, to our knowledge, not been conducted. This study will fill this void, by exploring the associations between job characteristics, needs and job satisfaction of people with intellectual disabilities.

This study

The present study aims to provide insight into the associations between job characteristics,

basic psychological needs and job satisfaction, and the processes underlying job satisfaction of people with intellectual disabilities, by investigating whether basic psychological needs can explain the relationship between job characteristics (i.e. job resources and job demands) and job satisfaction. It is predicted that job resources would allow for the fulfilment of the basic psychological needs for autonomy, relatedness and competence, whereas job demands would thwart basic psychological needs, and that fulfilment of basic psychological needs would be positively associated with job satisfaction. The central hypothesis of the study is: basic need satisfaction mediates the relationship between job characteristics and job satisfaction.

To preclude the possibility that observed relations would be due to employees' background variables, the hypothesis was examined after controlling for gender, age, level of intellectual disability, and employment type (which refers to the distinction between sheltered and integrated employment).

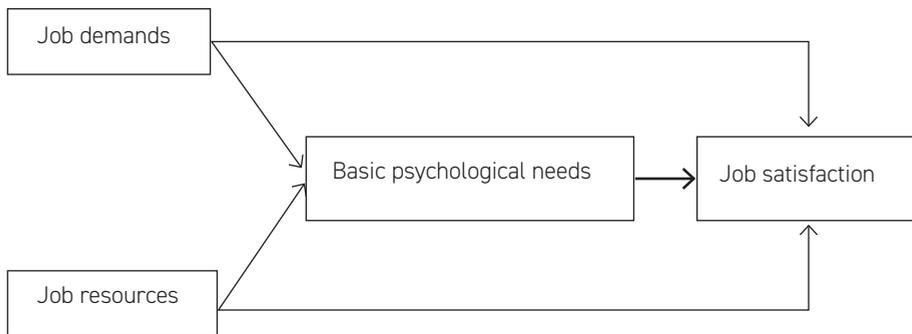


Figure 1. Model of factors associated with job satisfaction

METHOD

Procedure

Participants were recruited from a Dutch organization providing employment support to people with intellectual disabilities, by means of work activities in several day centres, and in integrated employment settings (individual and group placements). Clients qualified for the study that met the following inclusion criteria: (1) between 18 and 67 years old; (2)

intellectual disability as primary diagnosis; (3) moderate or mild intellectual disability, or borderline intellectual functioning; (4) sufficient communication ability in Dutch; (5) receiving employment support in either sheltered or integrated employment, or a combination of both; (6) at least two months in present employment setting. Exclusion criteria were (1) severe visual or hearing deficits; (2) having no current work activities (staying at home or having recreational day care). Every fifth client from the organization's alphabetically ordered register was approached. Potential participants were contacted through their mentors, who would first screen for eligibility based on the in- and exclusion criteria. Letters with the invitation to participate, were accompanied by a brochure in which the research project and information on confidentiality and anonymity was described in plain Dutch, and were clarified by the mentor if necessary, to ensure informed consent. The brochures included information on the voluntary nature of participation and their right to withdraw at any time. A reminder was sent when needed. The study was executed in compliance with a research design that had been approved by the client advisory board of the service organization (D-13 171).

Of the 428 people approached, 78 persons did not respond, and 205 indicated they did not want to participate. Of the 145 persons willing to participate, 28 more dropped out for reasons of no show, no permission from their legal representative, or being unfit for participation (e.g. not meeting inclusion criteria, too stressful), resulting in a total of 117 participants in this study.

Participants were interviewed at the employment setting, or, whenever this was not possible, at their home, by trained interviewers. All interviews were preceded by three test-items, to check for comprehension and to practice. Several measures were taken to enhance understanding, in line with recommendations for interviewing people with intellectual disabilities (Finlay & Lyons, 2001). This included phrasing questions without frequent use of reverse wording, the use of plain Dutch, and no ambiguous or complex phrasings. Answers to all questions were on the same 5-point scale (totally agree – totally disagree). The response scale was displayed on five separate, coloured cards, which were laid out on the table. Questions were displayed on a written card, which was read out loud by the interviewer. The respondent was then asked to place the question card below the appropriate answer card. Respondents were given the opportunity to elaborate on their answers, to give the interviewer additional information on their views and an indication on how the question was understood. Questions could be rephrased if necessary, according to a prescribed manner, set out in a protocol. The questionnaire allowed for registration of missing or uncodeable answers. As this study was part of a larger research project, additional interview questions which did not relate to job characteristics, needs or job satisfaction were also asked. The average length of the interviews was 75 minutes. To eliminate errors in the questionnaire and scoresheet, the actual interviews were preceded by a pilot interview

Participants

Of the 117 participants, 60 were female (51%) and 57 were male (49%). Their mean age was 37 years. 21% of the participants had a moderate intellectual disability (IQ range 35-50), 66% had a mild intellectual disability (IQ range 50-70), and 13% were diagnosed with borderline intellectual functioning (IQ range 70-85), combined with significant impairments in adaptive functioning, and as such they were in need of support provided by a care organization for people with intellectual disabilities. 73% of the participants worked in sheltered employment. 27 day centres were included in the study, which varied in the amount of support, degree of community integration and work activities provided (e.g. manufacturing, gardening, hospitality, painting, shop assistance, animal care, cleaning). 27% of the participants worked in integrated employment, in various jobs (e.g. cleaning, shop assistance, hospitality, gardening, manufacturing), either in individual (87%) or group (13%) placements. All participants had been declared unfit for gainful employment according to Dutch legislation. As such they were all reliant on government benefits for their income, and their jobs were unpaid.

Measures

Job satisfaction was assessed using a 5-item scale, developed by Judge, Locke, Durham and Kluger (1998), which was based on the Brayfield and Rothe (1951) job satisfaction scale. The scale was chosen as it provides an overall, global measure of job satisfaction, contains a limited number of items, uses simple words and phrases, and has proven to be a reliable measure in other studies (e.g. Judge et al., 2000). The scale comprises both positively and negatively worded items (e.g. "I find real enjoyment in my work", "I consider my job rather unpleasant"). Cronbach's α of the scale was 0.77 in this study.

The items measuring job characteristics (i.e. job demands and job resources) were adapted from well-established Dutch job content questionnaires. Adaptions, to improve comprehension by people with intellectual disabilities, consisted of simplification of items when necessary, addition of visual aids as a means of clarifying the response scale, and the choice for interview instead of self-report, with the possibility to elaborate on answers. Also, some new items were developed, based on previous research, to better suit the situation and perspective of people with intellectual disabilities (Akkerman, Janssen, Kef & Meininger, 2014). Job demands were measured using three subscales (i.e. psychological demands, physical demands and emotional demands). Cronbach's alpha for the overall job demands scale was 0.68. Items for the subscale psychological demands (5 items, e.g., "My job requires working very hard"; Cronbach's α = 0.60) were adapted from a Dutch version of the Job Content Questionnaire (JCQ; Karasek, Brisson, Kawamaki, Houtman, et al., 1998) and the questionnaire of Van Veldhoven and Meijman (1994). Physical demands (3 items, e.g. "In my job I am required to move or lift very heavy loads"; Cronbach's α = 0.58) were adapted from

Van der Doef and Maes (1999). Emotional demands (3 items, e.g. "In my job I have to deal with difficult people"; Cronbach's $\alpha = 0.60$) were measured with a self-constructed scale, and refers to the emotional stress associated with unpleasant situations. Job resources were measured using five subscales (i.e. decision authority, opportunities for skill utilization, meaningfulness, social support from co-workers, social support from mentor). Cronbach's alpha for the overall job resources scale was 0.78. Decision authority (5 items, e.g. "I can decide the order in which I do my work on my own"; Cronbach's $\alpha = 0.66$) was based on Van Veldhoven and Meijman (1994). Opportunities for skill utilization (3 items, e.g. "I get to do a variety of different things on my job"; Cronbach's $\alpha = 0.70$) were adapted from Van der Doef and Maes (1999). Meaningfulness was measured with a self-constructed scale (4 items, e.g. "The work I do is important"; Cronbach's $\alpha = 0.68$), and refers to the enjoyment and pride of doing something ego-strengthening and worthwhile. For the subscale social support from coworkers (7 items, e.g. "If I have problems in my job I can ask my colleagues for help"; Cronbach's $\alpha = 0.67$) five items measuring both social and work related aspects of interaction were selected from Van der Doef and Maes (1999), supplemented with two self-constructed items (e.g. "I can have fun with my colleagues") based on previous research (Akkerman et al., 2014). Social support from mentor (7 items, e.g. "If I have problems in my job I can ask my mentor for help"; Cronbach's $\alpha = 0.71$) was measured with a self-constructed scale, with items adapted from the subscale social support from coworkers and grounded in previous research (Akkerman et al., 2014). Items were selected measuring both social and support-related aspects of the relationship with the mentor. All job characteristics were measured on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree). Responses were coded such that higher scores referred to higher job demands and more job resources.

Fulfilment of basic psychological needs was assessed using an adapted version the Work-related Basic Need Satisfaction Scale (W-BNS; Van den Broeck, Vansteenkiste, De Witte, Soenens & Lens, 2010). Items were simplified when necessary, to improve comprehension by people with intellectual disabilities, visual aids were added to the response scale, and interviews in which participants could elaborate on their answers were held, instead of self-report. Before using it in this study the instrument was completed by seven persons with moderate to mild intellectual disabilities. They were able to comprehend the questions. Based on their suggestions a few minor adaptations were made to improve clarity. Internal consistency of the scale was acceptable in this study (Cronbach's $\alpha = 0.72$). The scale consisted of 18 items, on fulfilment or frustration of the needs for autonomy (e.g. "In my job, I feel forced to do things I do not want to do"), relatedness (e.g. "At work, I feel part of a group"), and competence (e.g. "I am good at the things I do in my job"). A composite score of general need satisfaction was provided, by grouping the three needs, in line with previous research and SDT's assumption that the three needs are positively related (e.g., Deci et al., 2001; Vansteenkiste et al., 2007).

Data on the control variables employment type (integrated or sheltered employment), level of intellectual disability, age, and gender were obtained from the client records of the participating organization. Data on level of intellectual disability was determined by a behavioural scientist. Three levels were discerned: moderate intellectual disability, mild intellectual disability, and borderline intellectual functioning.

Data analysis

The data were analysed using IBM SPSS statistics version 21. All variables were checked for outliers ($Z \geq 3.29$ or ≤ -3.29), which were winsorized to the nearest non-outlier (Tabachnik & Fidell, 2007). This was needed for three variables, for one or two cases. Preliminary analyses were performed to ensure no violation of the assumptions of normality, linearity, and homoscedasticity, and after verifying the lack of multicollinearity among explanatory variables, by using the tolerance index and the VIF. Pearson correlations were used to investigate the associations between job characteristics, basic psychological needs, and job satisfaction. The central hypothesis of this study pertaining to the mediating effect of basic psychological needs on the relationship between job characteristics (i.e. job demands and job resources) and job satisfaction was tested using multiple regression analysis, following the procedure as described by Baron and Kenny (1986).

RESULTS

Descriptive analyses

Descriptive data and bivariate correlations between all study variables are presented in Table 1. Workers with intellectual disabilities had a mean score of 4.33 (SD = 0.78) on job satisfaction, of 3.00 (SD = 0.69) on job demands, and of 4.26 (SD (0.43) on job resources. Mean score on the overall scale for fulfilment of basic psychological needs was 4.17 (SD = 0.47), for the subscales we found a mean score of 4.10 (SD = 0.66) on the need for autonomy, of 3.98 (SD = 0.74) on the need for relatedness, and of 4.43 (SD = 0.52) on the need for competence. Higher levels of job satisfaction were significantly associated with older age ($r = 0.26$, $p = 0.006$), with higher perceived job resources ($r = 0.42$, $p = 0.000$), and with fulfilment of basic psychological needs ($r = 0.62$, $p = 0.000$), but not with job demands ($r = -0.14$, $p = 0.133$). Higher level of basic psychological need fulfilment was associated with more perceived job resources ($r = 0.47$, $p = 0.000$), and with less perceived job demands ($r = -0.28$, $p = 0.002$).

Table 1. Descriptives and Pearson correlations coefficients (*r*) for all study variables

	Mean (SD)	1	2	3	4	5	6	7
<i>Control variables</i>								
Gender	0.49 (0.50)							
Age	36.81 (12.47)	-.10						
IQ level	1.92 (0.58)	.10	-.08					
Employment type	0.26 (0.44)	-.04	-.03	.12				
Job demands	3.00 (0.69)	.04	-.29**	-.20*	-.09			
Job resources	4.26 (0.43)	.10	-.04	-.06	-.04	.03		
Basic psychol. needs	4.17 (0.47)	.10	.21*	-.06	.06	-.28**	.47***	
Job satisfaction	4.33 (0.78)	.07	.26**	-.04	-.02	-.14	.42***	.62***

N ranges from 112 to 117 due to missing values; * $p < .05$ ** $p < .01$ *** $p < .001$

A multivariate ANOVA was conducted to compare participants in integrated and sheltered employment with respect to job demands, job resources, basic psychological needs, and job satisfaction. The multivariate results indicated no significant differences between participants in integrated and sheltered employment, Wilks' $\Lambda = 0.982$, $F(4, 108) = 0.495$, $p = 0.739$, indicating participants in integrated and sheltered employment were not significantly different in their level of perceived job demands, perceived job resources, fulfilment of basic psychological needs and job satisfaction. Analysis of variance also indicated no significant differences between men and women ($F(1, 114) = 0.55$, $p = 0.459$), and different IQ-levels ($F(2, 112) = 1.782$, $p = 0.173$) with respect to job satisfaction. Therefore the effects of employment type, gender and IQ-level were not controlled for in subsequent analyses.

Predictors of job satisfaction

Table 2 presents the findings from a three step hierarchical regression analysis predicting job satisfaction from job characteristics and basic psychological needs. Age was included in the first block as a control variable. The first model shows that age was a significant predictor of job satisfaction ($\beta = .27$, $p = 0.004$) and explains about 7% of variance in job satisfaction ($F(1, 110) = 8.69$, $p = 0.004$). In the second model job characteristics (i.e. job demands and job resources) were entered, there was a significant change in R square ($\Delta R^2 = .18$, $\Delta F(2, 108) = 13.31$, $p = 0.000$). The resulting model explained 29% of variance and was significant ($F(3, 108) = 12.42$, $p = 0.000$). Job resources were a significant predictor of enhanced job satisfaction ($\beta = .42$, $p = 0.000$), whereas job demands were no significant predictor ($\beta = -.09$, $p = 0.294$). When the job demands and job resources were included in the model, age still significantly predicted job satisfaction ($\beta = .25$, $p = 0.004$). Addition of basic psychological needs in the third

model, led to a significant increment (17%) in explained variance ($\Delta F(1, 107) = 31.90, p = .000$). The resulting model explained 43% of variance. Basic psychological needs were a significant predictor of enhanced job satisfaction ($\beta = .50, p = 0.000$). When the basic psychological needs were included in the model, age ($\beta = .18, p = 0.021$) and job resources ($\beta = .19, p = 0.027$) still significantly predicted job satisfaction, yet inclusion of basic psychological needs in the model did result in a reduction in the variance explained by age and by job resources, indicating basic psychological need fulfilment partially mediates the relationship between age and job satisfaction and between job resources and job satisfaction. Results of a Sobel test also suggest that the association between job resources and job satisfaction is significantly partially mediated by fulfilment of basic psychological needs ($Z' = 4.19, p = 0.000$).

Table 2. Multiple regression analysis (mediation analysis)

	R ²	R ² change	F change	B	Beta	t
Step 1	.07	.07	8.69**			
Age	.26			.02	.27	2.95**
Step 2		.18	13.31***			
Age				.02	.25	2.94**
Job demands				-.10	-.09	-1.05
Job resources				.77	.42	5.06***
Step 3	.43	.17	31.90***			
Age				.01	.18	2.34*
Job demands				.04	.04	0.46
Job resources				.35	.19	2.24*
Basic psychological needs				.84	.50	5.65***

N = 112, * $p < 0.05$; ** $p < 0.01$, *** $p < 0.001$

DISCUSSION

The present study investigated the associations between job characteristics, fulfilment of basic psychological needs and job satisfaction of people with intellectual disabilities. More specifically, it was investigated whether basic psychological needs (i.e., autonomy, relatedness, competence), as defined within SDT, mediated the relationship between job characteristics (i.e. job demands and job resources) and job satisfaction of people with intellectual disabilities. The study relied on the assumptions, based on the JD-R model and SDT, that job resources may establish conditions that facilitate fulfilment of the basic psychological needs, whereas job demands may thwart basic psychological needs. Basic psychological needs are assumed to be important for understanding optimal functioning, development and wellness, and hence were expected to be positively associated with job satisfaction

In the present study it was found that job demands were negatively associated with basic psychological needs, and were not associated with job satisfaction. According to expectations, job resources were positively associated with both fulfilment of basic psychological needs and job satisfaction. Also, basic psychological need fulfilment was associated with enhanced job satisfaction. The findings indicated that fulfilment of the needs for autonomy, relatedness and competence partially mediated the relationship between job resources and job satisfaction. In sum, these findings suggest that the provision of a resourceful work environment may play an important role in relation to job satisfaction of people with intellectual disabilities, and this can partially be explained by the finding that a positive, resourceful work environment may promote the fulfilment of basic psychological needs of people with intellectual disabilities. Job demands on the other hand, do not seem to have a direct relationship with job satisfaction of people with intellectual disabilities, yet as job demands thwart the fulfilment of basic psychological needs, they might be indirectly related to job satisfaction through the fulfilment of basic psychological needs.

The findings of this study are in line with findings from recent studies among non-disabled employees, that also found a positive association between job resources and basic psychological need satisfaction, a negative association between job demands and need satisfaction (e.g. De Cooman et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008), and a mediating role for basic psychological needs in the association between job characteristics and job outcomes (Boudrias et al., 2011; De Cooman et al., 2013; Fernet et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008). The present findings provide further evidence that the assumptions of the JD-R model and SDT are applicable to people with intellectual disabilities. Moreover, this study contributes to the knowledge on important factors related to job satisfaction of people with intellectual disabilities. Previous studies already pointed to the significance of job characteristics and fulfilment of needs in relation to job satisfaction of people with intellectual disabilities (e.g. Flores et al., 2011; Melchiori & Church, 1997). By combining two theoretical frameworks this study provides a more comprehensive, integrative view on their job satisfaction, that extends current knowledge and offers a more in-depth insight in the processes underlying job satisfaction of people with intellectual disabilities.

Limitations

Some limitations should be taken into consideration when interpreting the results of this study. First, the current study included people with intellectual disabilities that had significant work limitations. The majority of participants was in sheltered employment, and a smaller number in integrated employment. Although the latter reflects the current employment situation, results might not be fully generalizable to the entire population of people with intellectual disabilities. We suggest, particularly considering the developments

stimulating integrated employment, to conduct additional research, including more people with intellectual disabilities who have mild work limitations, and participate in integrated employment.

Second, for job resources, job demands and fulfilment of basic psychological needs composite scores were used, which was in line with previous research (e.g. Deci et al., 2001; De Cooman et al., 2013; Fernet et al., 2013; Van den Broeck, Vansteenkiste, De Witte, & Lens, 2008; Vansteenkiste et al., 2007). It may be interesting for future research to investigate whether distinct job characteristics (e.g. opportunities for skill utilization, social support) have different effects on basic psychological need fulfilment, and/or whether the needs for autonomy, relatedness and competence have distinct associations with job characteristics on the one hand and job satisfaction on the other hand.

Third, in this study, eight distinct job demands and job resources were chosen, based on the results of previous research. Generalizability of the findings to other job characteristics has yet to be established.

Fourth, as we were particularly interested in the views of people with intellectual disabilities themselves, in this study we relied on self-report to measure perceptions of job resources, fulfilment of basic psychological needs and job satisfaction. This, however, does have some limitations. Adaptions in existing scales were necessary, for needs of simplification. Moreover, even though various measures were taken to enhance understandability, limitations with respect to comprehension still cannot be ruled out, and may have negatively affected reliability of the scales involved. Also, as subjective measures were used for all variables, common method variance may have inflated the strength of the associations. In order to reduce potential problems of common method variance, participants were assured that there were no right or wrong answers, they were encouraged to answer as honestly as possible, and anonymity was guaranteed (Podsakoff, Mackenzie, Lee, & Podsakoff, 2003). It is nevertheless recommended that future research includes other measures of job characteristics, fulfilment of needs and job satisfaction (e.g. objective or proxy) to strengthen the findings.

Finally, as this study is cross-sectional in nature, caution is needed with respect to conclusions on the directions of the relationships. Longitudinal designs or controlled trials are recommended to increase insight in the causality of the associations.

Implications

The present findings offer implications for practice. Particularly, the findings point out that paying attention to the motivational potential of the work context may be important. The work context may either provide the nutriments for intrinsic motivation, healthy development and optimal functioning, or frustrate this. Knowledge of this is especially relevant for employers and for those providing support to people with intellectual disabilities.

The current study suggests it may be useful to direct support at providing a work environment in which the needs of persons with intellectual disabilities can be fulfilled. This implies that people with intellectual disabilities are enabled to experience their behaviour at work as freely chosen and volitional (need for autonomy), interact with and care for others, and feel valued and cared for by significant others at work (need for relatedness), and feel capable to master the environment and bring about desired outcomes (need for competence). In order to increase the opportunities of people with intellectual disabilities to flourish at work, it is advised that in selection and design of work environments attention is paid to enhancing positive, resourceful job characteristics, such as decision authority, meaningfulness, social support from co-workers, and social support from mentor, as well as on diminishing negative, demanding job characteristics, such as psychological, physical and emotional demands.

Both people and work environments may be subject to changes and developments. As a result of this, (perceptions of) the work environment, fulfilment of needs and job satisfaction are not static. A job that may have been a good option for a worker with intellectual disabilities at one point, may not be satisfying in time, as a result of new experiences, changed capacities and aspirations. It is therefore advised that attention for job characteristics and need fulfilment at work is ongoing.

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